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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,970	01/16/2004	Steven D. Bush	1776-0013	8323

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INDIANAPOLIS, IN 46204

EXAMINER	
TUROCY, DAVID P	
ART UNIT	PAPER NUMBER
1792	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/759,970	BUSH, STEVEN D.	
	Examiner	Art Unit	
	DAVID TUROCY	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 October 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-26* is/are pending in the application.

4a) Of the above claim(s) *17-20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendments, filed 10/17/2008, have been fully considered and reviewed by the examiner. The examiner notes the amendment to claims 21,23-26, 31-34, and 36. Claims 17-36 remain pending in the instant applicant, with claims 17-20 withdrawn due to a restriction requirement.

Response to Arguments

2. Applicant's arguments filed 10/17/2008 have been fully considered but they are not persuasive.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

The applicant argues against the combination of Mistrater, Cia, and Pinsley arguing that none of the references disclose or suggest altering the vertical flow rate of the coating based on the measure viscosity. However, the examiner disagrees, and initially notes that the rejection is based on the teachings of the references taken collectively. Specifically, Pinsly discloses during the coating process, solvent is evaporated from the coating solution and thus results in increasing the viscosity. While Pinsly discloses maintaining the constant coating speed but adjusts the viscosity to

maintain the coating thickness constant, Cia discloses that coating thickness is directly related to coating speed and viscosity. Therefore, taking the references collectively, one of ordinary skill in the art would have comprehended that to maintain a constant thickness, as the viscosity decreases either add in additional solution (as taught by Pinsly) to provide a constant thickness or adjust the coating speed (by adjusting the pumping speed) to correlate to the new viscosity (as suggested by Cia). Such a determination is well within the skill of one ordinary in the art and would have been obvious to adjusted the initial pumping speed to maintain coating thickness constant throughout the coating process because Cia discloses coating thickness uniformity is directly related to coating speed and viscosity and Pinsly discloses viscosity decreases during the coating process.

Therefore, since the process has an initial viscosity and an initial pumping speed (or angular velocity), and Pinsly discloses during the coating process, solvent is evaporated from the coating solution and thus results in a change of viscosity and Cia discloses the coating thickness uniformity is directed related to the viscosity and coating speed (i.e. pumping speed and angular velocity). As the coating process progresses, and the viscosity changes, it would have been obvious to one of ordinary skill in the art to have adjusted the initial pumping speed to compensate for the viscosity change and continue to maintain the constant coating thickness.

The applicant argues that Pinsly teaches away from altering the vertical flow rate, however, the examiner can not locate any support for such a proposition. The applicants cite a portion of the reference which discloses that the flow rate should be

substantially constant; however, such a teaching of is not a teaching away from altering the coating speed. Pinsly is cited as a teaching that it is known in the art that variations in coating thickness are directly linked to the variations in the viscosity of the coating solution. Cia discloses that the coating thickness is directly related to both viscosity of the coating solution as well as the coating speed. Therefore, taking the references collectively, one would reasonably expect to predictably provide a uniform coating by measuring the viscosity of the solution and either adjust the viscosity to maintain the viscosity in a desired range (as taught by Pinsly) or adjust the pumping speed accordingly because Cia discloses both variables are result effective variable (effect the coating thickness uniformity) and modification of one (pumping speed) in response to a variation in another (viscosity) to achieve the desired results is well within the skill of one ordinary in the art. Additionally, adjusting the pumping speed in response to the viscosity to maintain a constant thickness would have lead to predictable results because a predictable use of prior art elements according to their established functions to achieve a predictable result is prima facie obvious. See *KSR Int'l Inc. v. Teleflex Inc.*, 127 S Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007).

All other arguments are directed at newly added limitations that are discussed in the prior art rejection that follows.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 21, and 24-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5681391 by Mistrater et al, hereafter Mistrater in view of US Patent 6180310 by Pinsly, hereafter Pinsly and US Patent 6270850 by Cia et al., hereafter Cia.

Mistrater, Pinsley, and Cia are applied here for substantially the same reasons as set forth in the office action dated 8/24/2007 and for the reasons set forth in section 2 above, which is incorporated herein by reference.

Mistrater discloses a method for manufacturing a photoreceptor including providing a substrate to be coated with a charge transport layer ("CTL") layer, providing a tube having a upper opening sized to receive the substrate acting as an outlet, the tube having a inlet lower then outlet (see for example figures, Column 18). Mistrater discloses providing a circulating pump to force CTL solution through inlet and fill the tube with circulating CTL solution by way of the pump (Figures, column 12, lines 50-55). Mistrater discloses withdrawing the substrate from the tube at a pull rate and therefore the process as taught by Mistrater necessarily exhibits a differential rate. Mistrater discloses the thickness of the CTL solution deposited is directed related to the relative velocity of the coating material in the space between the drum and the tube wall as well as the viscosity of the coating solution (Column 18). Mistrater discloses a pull rate and vertical velocity and therefore such must result in a differential rate as required by the claim.

Mistrater fails to disclose the particulars of the thickness control. However, Pinsly discloses a method for depositing a CTL layer on drum similar to that as taught by Mistrater, discloses variations in the viscosity of the coating can result in thickness variations during the coating (Abstract, figures, column 2, lines 5-11, column 6). Pinsly discloses during the coating process, solvent is evaporated from the coating solution and thus results in increasing the viscosity. Pinsly discloses during the coating process (including withdrawing) measuring the viscosity of the fluid, where when the viscosity changes a determined threshold (Column 6, examples). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Mistrater to measure the viscosity during the coating process because Pinsly discloses that variations in the viscosity results in coating thickness variation which results in unacceptable results.

Mistrater in view of Pinsly discloses adjusting the viscosity to control the thickness by the addition of solvent, however, the references fail to suggest altering the pump velocity to control the thickness.

However, Cia et al. discloses a method for improving dip coating processes by flowing solution between a substrate and a wall, analogous to that disclosed in the process of Mistrater (abstract). Cia discloses the coating speed, i.e. the relative coating velocity, and the viscosity are related to the coating thickness uniformity (Column 4, lines 30-50).

Therefore, taking the references collectively, it would have been obvious to one of ordinary skill in the art to have modified Mistrater in view of Pinsly altered the relative

coating speed, i.e. adjusting the pumping speed, due to the sensed viscosity because Pinsly discloses viscosity changes throughout the coating process results thickness coating variation and Cia discloses that the coating speed and viscosity are directly related to the coating thickness.

As for the limitation requiring altering the pump motor angular velocity, Mistrater suggests pull rate and initial flow rate of the material results in a relative velocity of the coating material, which affects the coating thickness. Therefore it would have been obvious to one of ordinary skill in the art to have altered the angular pump velocity to alter the vertical flow rate of the fluid in response to the sensed velocity with a reasonable expectation of successfully adjusting the relatively velocity of the coating material. The prior art can be modified or combined to reject claims as prima facie obvious as long as there is a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375.

Therefore, taking the references collectively, one of ordinary skill in the art would have comprehended that to maintain a constant thickness, as the viscosity decreases either add in additional solution (as taught by Pinsly) to provide a constant thickness or adjust the coating speed (by adjusting the pumping speed) to correlate to the new viscosity (as suggested by Cia). Such a determination is well within the skill of one ordinary in the art and would have been obvious to adjusted the initial pumping speed to maintain coating thickness constant throughout the coating process because Cia discloses coating thickness uniformity is directly related to coating speed and viscosity and Pinsly discloses viscosity decreases during the coating process. Since the process

has an initial viscosity and an initial pumping speed, and Pinsly discloses during the coating process, solvent is evaporated from the coating solution and thus results in increasing the viscosity and Cia discloses the coating thickness uniformity is directed related to the viscosity. As the coating process progresses, and the viscosity changes, it would have been obvious to one of ordinary skill in the art to have adjusted the initial pumping speed to compensate for the viscosity change and continue to maintain the constant coating thickness.

Claims 24, 25, 26: Adjusting the pumping speed according to the measured viscosity would have been obvious to one of ordinary skill in the art as discussed above. Additionally, the examiner notes Cia, at column 3, lines 53-56, discloses lower solution viscosity results in a thinner coating, and thus one of ordinary skill in the art would recognize a need to decrease the coating speed and thus it would have been obvious to increase the pumping speed to compensate for the this lowered measured viscosity, i.e. lower pump speed will increase dwell time and thus increase a coating thickness to compensate for the lower viscosity that results in thinner coating. Additionally, it would have been obvious to increase the coating speed in response to a higher measured viscosity because such would result in a uniform coating thickness. Mistrater in view of Pinsly and Cia suggests adjusting the flow rate of the solution through the coating bath due to the sensed viscosity being above a predetermined setpoint, i.e. a threshold amount. It is the examiners position that such control processes are well within the skill of one ordinary in the art.

Claim 27: Pinsly discloses setting viscosity predetermined amounts during the control process to impart the substrate with a uniform thickness and therefore it would have been obvious to one skill in the art at the time of the invention was made to determine the optimal value for the viscosity predetermined amounts used in the process of Mistrater in view of Pinsly and Cia ,through routine experimentation, to impart the substrate with a uniform thickness.

Claim 28: Mistrater in view of Pinsly and Cia discloses adjusting pumping speed as discussed above, however, fails to explicitly discloses upper and lower pumping speeds. However, the pumping speed adjustment is a result effective variable, as taught by Mistrater in view of Pinsly and Cia, i.e. effects the coating uniformity, and therefore it would have been obvious to one of ordinary skill in the art to have determined the optimum pumping speed adjustment in the process of Mistrater in view of Pinsly and Cia, through routine experimentation, to impart the substrate with a uniform thickness.

Additionally, it is the examiners position that the claimed invention is merely a predictable use of prior art elements (control systems, vertical flow rate and viscosity) as discloses by Mistrater in view of Pinsly and Cia to produce the established function of the prior art elements (a uniform thickness). *See KSR Int'l Inc. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007).

Claim 29: Mistrater discloses the substrate is a drum (figures, examples).

Additionally, it is the examiners position that the claimed invention is merely a predictable use of prior art elements (control systems, vertical flow rate and viscosity) as

discloses by Mistrater in view of Pinsly and Cia to produce the established function of the prior art elements (a uniform thickness). *See KSR Int'l Inc. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007).

5. Claims 22-23, and 31-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mistrater in view of Pinsly and Cia as applied in paragraph 8 above, and further in view of US Patent 5149612 by Langlois et al., hereafter Langlois.

Claims 22-23, 31: Mistrater in view of Pinsly and Cia is applied here for the same reasons as set forth in paragraph 4 above, additionally, Mistrater discloses metering fluid using a motor driven pump of various configurations, but fails to disclose utilizing a variable speed controller. However, Langlois, teaching of metering a controlled vole rate of fluid discloses using a variable speed controller (column 9, lines 1-24). Therefore, Langlois discloses variable speed controllers are known and suitable in the prior art and therefore taking the references collectively, it would have been obvious to one of ordinary skill in the art at the time of the invention to include a variable speed controller in the process of Mistrater in view of Pinsly and Cia with a reasonable expectation of providing predictable control over the fluid flow rate.

Additionally, all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention. See *KSR Int'l Inc. v. Teleflex Inc.*, 127 S Ct. 1727, 1741, 82 USPQ2d.

Claims 32, 33, and 34: Adjusting the pumping speed according to the measured viscosity would have been obvious to one of ordinary skill in the art as discussed above. Additionally, the examiner notes Cia, at column 3, lines 53-56, discloses lower solution viscosity results in a thinner coating, and thus one of ordinary skill in the art would recognize a need to decrease the coating speed and thus it would have been obvious to increase the pumping speed to compensate for the this lowered measured viscosity, i.e. lower pump speed will increase dwell time and thus increase a coating thickness to compensate for the lower viscosity that results in thinner coating. Additionally, it would have been obvious to increase the coating speed in response to a higher measured viscosity because such would result in a uniform coating thickness. Mistrater in view of Pinsly and Cia suggests adjusting the flow rate of the solution through the coating bath due to the sensed viscosity being above a predetermined setpoint, i.e. a threshold amount. It is the examiners position that such control processes are well within the skill of one ordinary in the art.

Claim 35: Pinsly discloses setting viscosity predetermined amounts during the control process to impart the substrate with a uniform thickness and therefore it would have been obvious to one skill in the art at the time of the invention was made to determine the optimal value for the viscosity predetermined amounts used in the process of Mistrater in view of Pinsly and Cia ,through routine experimentation, to impart the substrate with a uniform thickness.

Claim 36: Mistrater in view of Pinsly and Cia discloses adjusting pumping speed as discussed above, however, fails to explicitly discloses upper and lower pumping

speeds. However, the pumping speed adjustment is a result effective variable, as taught by Mistrater in view of Pinsly and Cia, i.e. effects the coating uniformity, and therefore it would have been obvious to one of ordinary skill in the art to have determined the optimum pumping speed adjustment in the process of Mistrater in view of Pinsly and Cia, through routine experimentation, to impart the substrate with a uniform thickness.

Additionally, it is the examiners position that the claimed invention is merely a predictable use of prior art elements (control systems, vertical flow rate and viscosity) as discloses by Mistrater in view of Pinsly and Cia to produce the established function of the prior art elements (a uniform thickness). *See KSR Int'l Inc. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007).

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID TUROCY whose telephone number is (571)272-2940. The examiner can normally be reached on Monday-Friday 8:30-6:00, No 2nd Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David Turocy/
Examiner, Art Unit 1792

/Timothy H Meeks/
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